

Agile Etalon Filter for Differential Absorption LIDAR, Phase I Project

SBIR/STTR Programs | Space Technology Mission Directorate (STMD)



ABSTRACT

Modern sensing systems often are required to pick out a very specific wavelength in a sea of other light (such as in daylight), making precise optical filtering a vital part of many sensing systems. Michigan Aerospace Corporation (MAC) plans to design, build and test an agile, frequency-tunable Fabry-Perot interferometer (etalon) for use as an optical filter of background light as part of a Differential Absorption LIDAR (DIAL) system. MAC's extensive history with designing and building rugged etalons for NASA and other customers will be key to this effort. Phase I will involve the design of this specific etalon and the testing of a faster method for precisely tuning it. Phase II will then involve the construction and test of the etalon.

ANTICIPATED BENEFITS

To NASA funded missions:

Potential NASA Commercial Applications: This new, faster-tuning etalon technology will be appropriate not only for NASA DIAL/IPDA-type LIDAR systems, but also for other NASA remote-sensing tasks requiring rapidly-tunable wavelength discrimination. The ruggedness of the design will ensure the ability to use such etalons in airborne and space applications, as well as with ground systems.

To the commercial space industry:

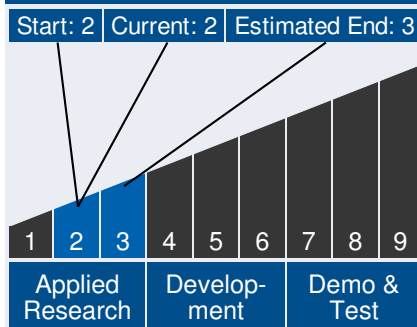
Potential Non-NASA Commercial Applications: Non-NASA applications will be similar to NASA applications for precise, rapidly-tunable optical filters for sensing systems of all kinds, including those in rugged environments (airborne, shipborne, etc).



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Technology Maturity



Management Team

Program Executives:

- Joseph Grant
- Laguduva Kubendran

Program Manager:

- Carlos Torrez

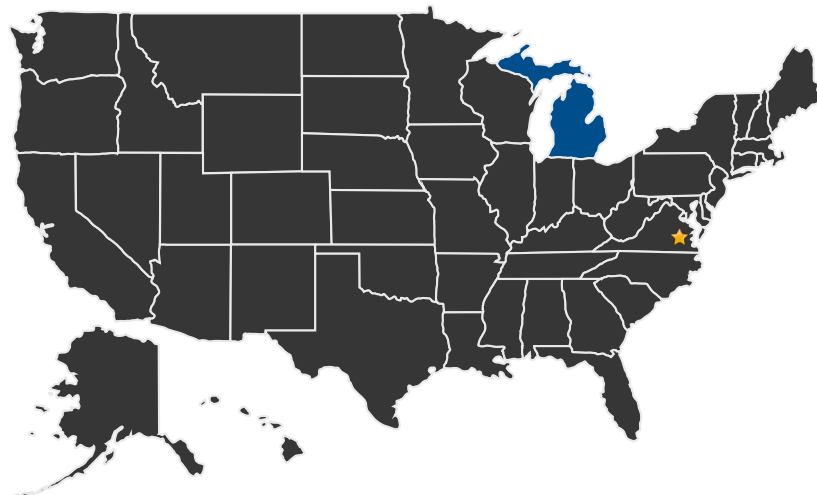
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U.S. WORK LOCATIONS AND KEY PARTNERS



■ U.S. States
With Work

★ **Lead Center:**
Langley Research Center

Other Organizations Performing Work:

- Michigan Aerospace Corporation (Ann Arbor, MI)

PROJECT LIBRARY

Presentations

- Briefing Chart
 - (<http://techport.nasa.gov:80/file/23202>)

Management Team *(cont.)*

Principal Investigator:

- William Johnson

Technology Areas

Primary Technology Area:

Science Instruments,
Observatories, and Sensor
Systems (TA 8)

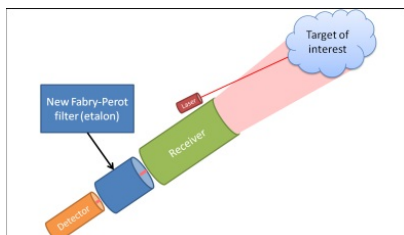
└ In-Situ Instruments and
Sensors (TA 8.3)

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IMAGE GALLERY



Agile Etalon Filter for Differential Absorption LIDAR, Phase I

DETAILS FOR TECHNOLOGY 1

Technology Title

Agile Etalon Filter for Differential Absorption LIDAR, Phase I

Potential Applications

This new, faster-tuning etalon technology will be appropriate not only for NASA DIAL/IPDA-type LIDAR systems, but also for other NASA remote-sensing tasks requiring rapidly-tunable wavelength discrimination. The ruggedness of the design will ensure the ability to use such etalons in airborne and space applications, as well as with ground systems.